

**Notice of Allowability**

Application No.

10/800,848

Examiner

FATIMAT O. OLANIRAN

Applicant(s)

BIEGELSEN, DAVID K.

Art Unit

2614

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/3/2010.
2. ☒ The allowed claim(s) is/are 1,3-6,8-11 and 13-25.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- \* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |  |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 5. <input type="checkbox"/> Notice of Informal Patent Application  |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>20100308</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment  |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance                         |
|  | 9. <input type="checkbox"/> Other _____.   |

## **DETAILED ACTION**

### **EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Ramaswamy on March 15 2010

The application has been amended as follows:

Claim 1 recites:

A method for processing hypersonic signals performed by a hypersonic signal-emitting device, comprising: generating a signal; and forming a plurality of individual transducer outputs of the signal at a plurality of phases, the outputs having a common frequency and amplitude, the individual transducer outputs generating wavelets originating at a common origin with reference to a first axis, and the plurality of phases being generated using electronic delays; forming a plurality of focused hypersonic beams based on the wavelets; receiving a plurality of reflected hypersonic signals; simultaneously detecting a plurality of objects based on the plurality of reflected hypersonic signals;

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learning, based on the plurality of reflected hypersonic signals, sets of transmission parameters that are sets of phases for optimally steering and focusing the hypersonic beams in order to focus (maximize) transmission of the hypersonic beams and audible power to the plurality of objects, the learning including associating a set of transmission parameters with each of a plurality of detected objects, storing the sets of transmission parameters and computing a resultant set of transmission parameters based on the stored sets of transmission parameters; generating the plurality of hypersonic wavelets based on the resultant set of transmission parameters associated with a plurality of neighborhoods for the hypersonic beams; and transmitting audio information to the plurality of objects detected at locations corresponding to the neighborhoods based on the resultant set of transmission parameters.

Claim 11 recites:

An apparatus that processes hypersonic signals, comprising: a memory; a plurality of transducer elements formed into a transducer element array, the transducer elements all having a common position with reference to a first axis; a driver that drives the transducer elements with a signal at a plurality of phases, the driver having a delay processor that forms the phases of the signal causing the transducer element array to form a focused hypersonic beam; a detector that simultaneously detects a plurality of objects based on echo signals received by the transducer element array;

a device that learns, based on the echo signals, sets of transmission parameters that are sets of phases for optimally steering and focusing the hypersonic

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beams in order to focus (maximize) transmission of the hypersonic beams and audible power to the plurality of objects, the learning including associating a set of transmission parameters with each of the plurality of detected objects, storing the sets of transmission parameters in a memory and computing a resultant set of transmission parameters based on the stored sets of transmission parameters; and a signal generator that generates an output signal to encode audio information for transmission to each of the plurality of objects based on the resultant set of transmission parameters.

***Allowable Subject Matter***

1. Claim 1, 3-6, 8-11, 13-25 are allowed.
2. Claims 1 and 11 are the independent claims;
3. The following is a statement of reasons for the indication of allowable subject matter: hypersonic arrays for scanning and beam forming are well known in the art as evidenced by Pompei (2001/0007591), Tanigawa (4896304), and Li (5986972). In addition directional arrays for producing an audible beam are well known in the art as evidenced by Manabe (6556687).
4. However examiner could not find art that teaches or provides a reason to combine: the limitations of claim 1, 11:

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“....learning, based on the plurality of reflected hypersonic signals, sets of transmission parameters that are sets of phases for optimally steering and focusing the hypersonic beams in order to focus transmission of the hypersonic beams and audible power to the plurality of objects, the learning including associating a set of transmission parameters with each of a plurality of detected objects...”

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to FATIMAT O. OLANIRAN whose telephone number is (571)270-3437. The examiner can normally be reached on M-F 10:00-6 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

FO

/Vivian Chin/  
Supervisory Patent Examiner, Art Unit 2614